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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/645,833	08/20/2003	Grzegorz J. Kusinski	020030-000910US	7656

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EXAMINER

YEE, DEBORAH

ART UNIT	PAPER NUMBER
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1793

MAIL DATE	DELIVERY MODE
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12/04/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/645,833	Applicant(s) KUSINSKI ET AL.	
	Examiner Deborah Yee	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 to 15 and 17 to 21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 to 15 and 17 to 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 21, 2007 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 17 recites "step (iii) comprises cooling said homogeneous austenite phase to a temperature of from about 800C to about 1,000C", which is indefinite since parent claim 11 requires step (iii) cooling to go through the martensite transition range to obtain laths of martensite and films of retained austenite, and cooling to "800C to about 1,000C" appears to be above the martensitic transitional temperature range. Note page 8 of Applicant's specification teaches 800 to 1,000C to be the recrystallization temperature rather than martensitic transitional temperature range.

Double Patenting

5. Claims 1 to 15 and 17 to 21 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 to 20 of U.S. Patent No. 6,273,968 alone or in view of US Patent 4,586,957.

6. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both disclose high-strength high-ductile alloy carbon steels having been processed in substantially the same manner comprising the steps of forming a carbon steel having a microstructure consisting of laths of martensite alternating with retained austenite. Although patent '968 claims do not recite cold deforming to achieve high tensile strength, such step is taught on lines 1 to 8 of column 6, which states "The steel alloys of this invention are particularly useful in products that require **high tensile strengths** and are manufactured by processes involving **cold forming** operations, since the microstructure of the alloys lends itself particularly well to cold forming". Moreover, it is well known in the art to cold work carbon steel carbon steel having a microstructure consisting of laths of martensite with retained austenite to increase strength as evident by US Patent '957 on lines 2-25 in column 6. Since high strength is desired and sought by US Patent '968, then it would be an obvious modification in view of the US Patent '957 teaching to incorporate cold working to produce no more than the known and expected effect from such an additional step.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1 to 15 and 17 to 21 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Thomas (US Patent 6,273,968) for the reasons as set forth in Paragraph number 6.

9. Claims 1 to 14 and 19 to 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masumoto et al (US Patent 4,586,957).

10. Masumoto on lines 2 to 24 of column 6 and lines 39 to 42 in column 8 discloses forming an analogous carbon steel alloy having a microstructure comprising a mixture of lath martensitic phase and austenite followed by cold working without heat treatment to achieve a tensile strength (TS) as high as 400kg/mm² (equivalent to 568 KSI and is within the TS of at least 150Ksi recited by claim 1 and TS range of 150 to 500KSI recited by claim 2).

11. Masumoto on lines 35 to 43 in column 7 discloses cold working by rolling or drawing with a total reduction of at least 85% which meet one or more of the dependent claims. Even though reduction per pass of at least 20%, 25% or 25 to 50% as recited by dependent claims 3, 4 and 5, respectively, are not disclosed, such would not be patentable difference since it would be a matter of choice well within the skill of the

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artisan to determine reduction rate which is productive of no new and unexpected results.

12. Masumoto on lines 39-42 in column 8 teaches cold drawing without intermediate annealing and hence meet claim 6. Moreover, prior art teaches cold working and would obviously be performed at low temperatures as recited by claims 7 and 8.

13. In regard to claims 9 and 10, prior art on lines 37-38 in column 7 teaches cold working by rolling or drawing to form ribbon, tape or wire.

14. Masumoto in claim 1 of column 18 discloses a steel alloy having a composition with alloying constituents that overlap with those recited in the claims 14 and 19. Note the prior art claim 1 steel composition has alloying elements with a lower atomic% limit of 2% Ni-7.5%Cr-0.5%Al-0.5%C-89.5% Fe and when converted to weight%, equals about 2.12% Ni- 7.06% Cr-0.24%Al-0.11%C-89.5% Fe. The prior art alloying elements have lower limit wt% ranges that are within those recited by claims 14 and 19.

15. Prior art steel is formed by heating at high temperature to molten state followed by rapid cooling to achieve lath martensite and austenite structure. Even though prior art does not specifically teach cooling a solid carbon alloy steel having a homogeneous austenite phase with all alloying elements in solid solution, such would be expected to occur since prior art steel is rapidly cooled from the molten state and solidifies and is further cooled through the austenitic phase temperature followed by further cooling to the martensitic transitional phase temperature.

16. Even though prior art does not teach the percentage of retained austenite, martensite start temperature or austenite film with uniform orientation as recited by one

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or more of the other dependent claims, such would be expected since composition, process, and tensile strength are closely met, and in absence of proof to the contrary.

Response to Arguments

17. Applicant's arguments filed September 21, 2007 have been fully considered but they are not persuasive.

18. With respect to the double patenting rejection including both Thomas and Matsumoto, it was submitted that the two references are not combinable because they deal with production of two different types of steel and through two different types of processes.

19. Applicant stated that Thomas relates to the production of carbon steels, while Matsumoto relates to stainless steels. It is the Examiner's position that Masumoto in claim 1 of column 18 discloses a steel alloy composition having alloying constituents whose wt% ranges overlap and therefore suggest the steel of Thomas. Note the prior art claim 1 steel composition has alloying elements with a lower atomic% limit of 2% Ni-7.5%Cr-0.5%Al-0.5%C-89.5% Fe and when converted to weight%, equals about 2.12% Ni- 7.06% Cr-0.24%Al-0.11%C-89.5% Fe. The prior art alloying elements have lower limit wt% ranges that are within the alloy wt% ranges of 0.05 to 0.2%% C and 6 to 12% Cr recited by claim 22 of Thomas. Hence the steels of Thomas and Matsumoto are analogous.

20. Moreover, even though Applicant stated that Thomas teaches a different process from Matsumoto, such would not be a patentable difference since Matsumoto process is

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merely a secondary teaching to show that it is well known in the art to cold work analogous carbon steel carbon steel having a microstructure consisting of laths of martensite with austenite to increase strength.

21. It was further submitted that Thomas does not disclose or claim a process wherein the alloy is cold worked without intermediate heat treatment. The section cited by Examiner, lines 1 to 7 in column 6 of Thomas, simply states that the alloys can be cold worked. Examiner maintains her position that it would be obvious to cold work the Thomas alloy without heat treatment to increase strength. Thomas teaches that when steels require high tensile strength, they can be manufactured by a cold-forming operation. There is no teaching or suggestion of heat treatment in the Thomas disclosure. In addition the secondary reference, Matsumoto, also, teaches that analogous carbon steels with a microstructure consisting of laths of martensite with austenite can be cold worked without heat treatment to increase strength. Hence Applicant's claimed process would be not patentably distinguished over Thomas in view of Matsumoto.

22. The 103 rejection over Matsumoto has been noted by Applicant. The newly submitted amendment in claim 1 to further limit the carbon alloy steel to a solid would not patentably distinguish claims over prior art. Although Matsumoto process starts cooling alloy from the molten state, it still cools and solidifies, and after solidification continues to cool through the austenitic-phase temperature range down to the martensitic-phase temperature to form a mixture of laths martensite and austenite. One

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skilled in the art would obviously expect the alloying elements to be in solid solution since prior art is rapidly cooled through the austenitic phase temperature range.

23. It was stated that Matsumoto does not produce steels having a microstructure consisting of laths of martensite alternating without about 0.5% to about 15% by volume of films of retained austenite as recited by the claims. There is no disclosure of laths of martensite alternating with films of austenite. In addition, the term "austenite phase" indicates to those skilled in the art a structure of austenite grains, not films. It is the Examiner's position that this is merely Applicant's statement with no convincing evidence (e.g. comparative test data). Moreover, since prior art teaches a composition, process of making, and properties (high tensile strength and cold workability) that closely meet present invention, then laths of martensite alternating with films of austenite as recited by the claims would be expected in absence of proof to the contrary.

24. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah Yee whose telephone number is 571-272-1253. The examiner can normally be reached on monday-friday 6:00 am-2:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Deborah Yee/
Primary Examiner
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/DY/

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